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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,573	01/28/2005	Shigeo Yamaguchi	040894-7171	8882

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MORGAN LEWIS & BOCKIUS LLP  
1111 PENNSYLVANIA AVENUE NW  
WASHINGTON, DC 20004

EXAMINER
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BARTON, JEFFREY THOMAS

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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06/05/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/522,573	<b>Applicant(s)</b> YAMAGUCHI ET AL.	
	<b>Examiner</b> Jeffrey T. Barton	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-5 and 12 is/are allowed.
- 6) ☒ Claim(s) 6-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendment filed on 21 February 2008 does not place the application in condition for allowance.

### ***Status of Rejections Pending Since the Office Action of 22 August 2007***

2. The rejection of claims 6-10 under 35 U.S.C. §102(b) as anticipated by Koike et al is maintained.
3. All other rejections are withdrawn.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 6-10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Koike et al. (U.S.P.G.Pub 2001/0002048).

Koike discloses non amorphous aluminum indium nitride and aluminum gallium indium nitride (see the entire document), which, it is the Examiner's position, has the claimed Seebeck coefficient and electrical resistivity, particularly in view of the fact that aluminum indium nitride is within the scope of formula (B) in instant claim 6 (see

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abstract with  $z=0.70$  and  $x$  being 0.3). Since Koike teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

In addition, the instant Seebeck coefficient and electrical resistivity would obviously have been present once Koike's aluminum indium nitride has been provided. Note In re Best, 195 USPQ at 433, footnote 4 (CCPA 1977) as to the providing of this rejection under 35 USC 103 in addition to the rejection made above under 35 USC 102.

### ***Allowable Subject Matter***

6. Claims 1-5 and 12 are allowed.

7. The following is an examiner's statement of reasons for allowance:

Claim 1 is deemed to be allowable over the prior art of record, since the prior art neither teaches nor fairly suggests a material having the claimed composition. The closest prior art is considered to be Hsieh et al (US 6,599,564) and Scholl et al. (US 2004/0108803)

Scholl et al gives a general suggestion of aluminum, gallium, and indium oxynitrides, among numerous dielectric materials suitable for use as a dielectric layer in a lamp, along with a statement that combinations of the listed materials are also possible. (Paragraph 0029) In order to arrive at Applicant's claimed composition, gallium and indium oxynitride would need to be selected from the list of dielectric materials, and combined in the specific claimed composition ranges. Because Scholl et al does not recognize the thermoelectric properties of such compositions, it is the Examiner's position that it would not have been obvious to one having ordinary skill in

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the art to optimize the composition to arrive at the claimed composition having the claimed Seebeck coefficient

Hsieh et al teach oxidation of an AlInGaN layer to form an oxynitride. (Column 3, lines 49-51; Column 6, lines 43-46) Hsieh et al only disclose compositions in which the subscript z of the instantly claimed formula is 0.9 or greater - thus not meeting the limitations of the claim. Especially since Hsieh et al also do not recognize this material as being a thermoelectric material, the Examiner's position is that it would not have been obvious to a skilled artisan to optimize the composition to arrive at the claimed composition having the claimed Seebeck coefficient.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Response to Arguments***

8. Applicant's arguments filed 21 February 2008 have been fully considered but they are not persuasive.

Regarding claims 6-10 Applicant argues that Koike et al do not disclose the composition having a non-amorphous structure. This is not persuasive because Koike et al clearly teach deposition of crystalline  $\text{Al}_{0.70}\text{In}_{0.30}\text{N}$  (Paragraph 0152), which corresponds to the instantly claimed composition with  $z=0.7$ ,  $y=0$ ,  $x=0.3$ ,  $u=0$ ,  $v=0$ ,  $w=0$ , and  $m=1$ . The composition is clearly anticipated. The Federal Circuit has held that

“[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art’s functioning, does not render the old composition patentably new to the discoverer.” *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). As the composition is known in the prior art, the Examiner's position is that the claimed Seebeck coefficient and resistivity are inherently present, and discovery of such properties is not sufficient to patentably distinguish the claims.

While Koike does disclose amorphous materials as pointed out by Applicant, this does not diminish the additional disclosure of a crystalline material corresponding to the claimed composition. (Paragraph 0152)

### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Jeffrey T. Barton whose telephone number is (571)272-1307. The examiner can normally be reached on M-F 9:00AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kaj K Olsen/  
Primary Examiner, Art Unit 1795

JTB  
2 June 2008